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ABSTRACT

In fall 1993, administrators and faculty at the Crabapple Middle School in Roswell, Georgia, implemented the Multi-Age Team (MAT) program, creating multiage teams of sixth-, seventh-, and eighth-grade students. The project's main goal was to enhance self-esteem. Additional goals included implementation of interdisciplinary, thematic instruction; flexible scheduling; and Project Adventure, a program designed to build leadership, group relationships, and self-confidence. Other goals included the development of critical thinking, cooperative learning, hands-on learning, and inclusion grouping for learning disabled and gifted students. This 1995-96 report describes the evaluation procedures used, data collected, and the interpretation of results. The quantitative data collected for MAT and comparison students included Iowa Test of Basic Skills (ITBS) results, Coopersmith Self-Esteem Inventory (CSEI) scores, and attendance and behavior referral data. Although ITBS math computation scores of seventh-grade MAT students were lower than scores of comparison students in 1996, there was no significant difference in year three. The previous result may be linked to earlier curricular decisions. MAT students' scores on the CSEI, academic self-concept, had been lower than comparison students in grade 6 and then significantly higher than non-MAT students in grade 8. Analysis of these data suggested several interpretations. MAT students also had fewer disciplinary referrals. Qualitative data collected included responses to surveys and interviews conducted with students, parents, and teachers. Analysis of interview and survey responses indicated that most faculty believed that the MAT structure, Project Adventure, and mentoring relationships enhanced students' self-esteem. Responses also indicated that interdisciplinary teaching occurred; however, in year two, units were smaller and math appeared to be taught separately. Hands-on learning appeared to occur more frequently in the MAT teams, scheduling was flexible, and many gifted and disabled students were taught within MAT groups. (Contains 1 figure, 1 chart, and 8 tables.) (LPP)

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Evaluation of Multi-age Team (MAT) Implementation at Crabapple Middle School: Report for 1995-1996

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Evaluation of Multi-Age Team (MAT) Implementation at
Crabapple Middle School

Introduction

MAT program implementation at Crabapple Middle was undertaken by administrators and faculty in the fall of 1993. An important project goal was the creation of multi-age teams of 6th, 7th, and 8th grade students. Two groups of approximately 110 students were assigned to teams of four teachers. At Crabapple, where achievement was high, ITBS percentile scores averaged 60-70%, the main goal was to enhance self-esteem. Additional goals included implementation of interdisciplinary, thematic instruction, flexible scheduling, Project Adventure, development of critical thinking, cooperative learning, hands on learning, and inclusion grouping for learning disabled and gifted students.

Program evaluation began at Crabapple Middle in 1993 and was completed in the fall of 1996. The evaluation design involved quantitative and qualitative methods. Quantitative data included Iowa Test of Basic Skills (ITBS) scores, Coopersmith Self-Esteem Inventory (SEI) scores, and attendance and behavior referral data. Qualitative measures included surveys and interviews conducted with parents, students, and teachers.

Procedures

Quantitative data included Iowa Test of Basic Skills (ITBS) scores, Coopersmith Self-Esteem Inventory scores, and attendance and behavior referral data collected from MAT and Comparison students. ITBS tests were administered to seventh and eighth grade students each spring. Self-esteem measures were administered each fall and spring. Attendance and behavior totals were calculated at the end of each school year.

Qualitative data included surveys administered to students and parents and annual interviews with students, parents, and teachers in MAT and Comparison programs. Surveys were developed to assess particular goals of the MAT program and included items to measure effective school variables as well. In a similar fashion, interview questions for students, parents and teachers were constructed to assess specific goals of the MAT project.

Quantitative Analyses. In year three, t tests were used to determine if significant differences existed between MAT and comparison student ITBS scores, attendance, and discipline referrals. Analysis of variance (ANOVA) was used to explore differences between MAT and comparison students SEI scores.

Qualitative Procedures. Parent and student surveys, in which items focused on program goals, were constructed and administered to MAT and comparison students. Surveys were collected, responses were tabulated, percentages calculated and analyzed, and conclusions formed. Interviews with MAT and comparison parents were conducted. Responses were transcribed and analyzed, and conclusions were drawn.

Quantitative Results

This section summarizes quantitative findings from comparisons of the MAT and non-MAT students for year three of the project. Included here are results of t tests on MAT and comparison student ITBS scores, number of absences, and numbers of discipline referrals. Results of ANOVA for CSEI scores of MAT and comparison students are presented as well.

Given the unique circumstances surrounding the MAT program, its environment, and the lack of independence among students within Crabapple Middle School, these results are best viewed in a descriptive context. Results of inferential tests comparing MAT students with Comparison students should be interpreted with this limitation in mind. Generalizations must, therefore, be seen as quite tentative with considerable need for validation through analyses of data collected over a longer span of time. Likewise, the transportability of this experience to other schools cannot be unambiguously established in the absence of actual implementations in other environments.

Because a school-based longitudinal study naturally involves multiple sets of students progressing through the institutional cycle, it is best for discrete sets of students to be conceptualized as cohorts defined by the years in which students are enrolled in particular grades. Even in the context of the MAT program, students are administratively tagged based on the grade level in which they would be currently placed. This facilitated the production of Chart 1 which depicts the five cohorts of students touched thus far by the MAT program in Crabapple Middle School together with the various data elements which currently exist.

ITBS Results

Achievement as Assessed by the ITBS. Given the prominent role of standardized test scores in the current environment of accountability, no examination of a program such as the MAT Project would be complete without a look at changes in achievement scores. Test information for students was available only in the form of percentile ranks, thus average percentile ranks appear in tables.

Inspection of the information in Table 1 reveals three results. First, students at Crabapple score quite well on the ITBS. The average percentile ranks are virtually all in the 70s. Secondly, no statistically significant differences existed between MAT and comparison students mean ITBS scores in year three of the project. Table 1 indicates, thirdly, that for the seventh and

eighth grade students at Crabapple who took the ITBS in the spring of 1996, MAT means are uniformly higher than non-MAT means. In years one and two a statistically significant difference existed between MAT and Comparison students with respect to their average performance on Math Computation. While the seventh grade MAT mean on math computation was lower than comparison students' mean score in 1996, there was no significant difference in year three. The math computation anomaly has been linked to specific curricular decisions which were made in one of the MAT teams.

Absenteeism and Disciplinary Referrals.

Another potential barometer of student affect concerning school is afforded through institutionally collected information pertaining to student absenteeism and disciplinary referrals. Disciplinary referral rates are reported separately for those made by teachers within the students' team and those outside that team at Crabapple. Summaries of that information for both MAT and Comparison students are presented in Table 2 for 1995-1996.

Considering absenteeism, no statistically significant difference existed between MAT and comparison students' days out of school. Patterns of results with respect to the descriptive statistics reflect that MAT students had slightly lower absenteeism rates for some grade levels in some years and higher rates for others.

In general, disciplinary referrals were somewhat lower for MAT students, both in numbers of referrals from teachers in their own teams, as well as from teachers outside those teams. Where there were statistically significant results, for in-team referrals for grade eight, for example, MAT students were referred less at a statistically and significantly lower level. Differences observed within the data for years two and three, however, seem less pronounced than those from the first year of the program in 1993-94.

Results for Self-Esteem (CSEI).

Table 3 indicates that, in the ANOVA of results regarding CSEI School Self-Esteem for MAT and comparison students, three significant effects were found 1995-1996. First, a program main effect existed in which non-MAT students were found to be generally higher than MAT students. In addition, a time main effect indicated that Crabapple students score higher on the CSEI in the fall than in the spring. Most interestingly, a program by grade interaction occurred in which non-MAT students tended to score higher in the lower grade levels while MAT pupils scored higher in the upper grade levels. This happened in such a way that MAT students consistently scored higher than their non-MAT peers by the time students reached grade eight.

Regarding the Social Self-Esteem dimension, Table 4 indicates that non-MAT students scored higher than MAT students. There was also evidence of a time by grade interaction effect in which sixth

graders' scores tended to increase from fall to spring, seventh graders scores tended to decrease, and eighth graders tended to stay about the same.

On the Home Self-Esteem subtest, shown in Table 5, results for non-MAT students are higher overall, and scores tend to decline from sixth to eighth grade for all students.

Overall, results for General Self-Esteem, shown in Table 6, reflect that non-MAT students scored higher on CSEI General Self-Esteem.

Discussion of CSEI Results.

Perhaps the most interesting finding in the ANOVA for CSEI scores at Crabapple is the fact that, consistently from the beginning of MAT implementation at the school in 1993 to the spring of 1996, MAT students scores on the CSEI, academic self-concept, have been lower than comparison students in grade six and then significantly higher than non-MAT students in grade eight.

What explanations exist for this finding? The authors indicated in the year-two report, that it may be possible that sixth graders suffer a greater shock when they arrive at Crabapple to find that they are in a different situation from most other sixth graders. In addition to adjusting to a new physical environment and departmentalized classes, the MAT students are in classes with older students, seventh and eighth graders, who are clearly larger, older, more capable as students, and more skillful interpersonally. Further, these neophytes may be asked to use seventh or eighth grade texts which they recognize as being assigned historically to higher grade levels. Already feeling insecure, they may find these conditions somewhat threatening.

However, as the sixth graders gain experience and maturity in the teams and become seventh graders, their roles may change from those being mentored to mentors. For the next two years, these students counsel younger students, increasing feelings of self-competence. By year three, MAT students are in the traditional "top dog" position in the school. Further, they may now be mentoring younger colleagues routinely in academics, in Project Adventure, exploratory classes, and socially in the MAT community as well. This interpretation was further reinforced in the interviews with teachers, parents, and students who indicated that an evolving strong emphasis in the MAT teams is on living, interacting, and conducting interpersonal problem solving in positive, effective ways.

Qualitative Results:

Interviews

Interview questions focused on goals of the middle school MAT Projects. The Crabapple MAT projects sought to enhance achievement, self-concept, motivation and attendance, to improve sense of community, and to enhance commitment and empowerment of students, teachers, and parents. Multi-age grouping, flexible scheduling, interdisciplinary thematic instruction, cooperative

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learning, instruction on critical thinking, increased use of hands on learning, and Project Adventure were employed to accomplish these goals.

MAT Grouping. Multi-aged grouping was implemented at Crabapple Middle School in 1993 and the structure of those two teams has continued to the spring of 1996. Two teams, each with 110 students were created and have four regular teachers and a counselor assigned to each team. Other teaching faculty such as IRR and art may work in and out of the teams. Teaching team members have concentrations in math, social studies, science, and reading/language arts. The gifted and learning disabled are served on team in the MAT programs and, in year two of MAT implementation, MAT teachers earned certifications in gifted education.

Parent councils for both MAT A and B were added to the MAT structure in year three and these groups served to increase communication, involvement, and support for participants. In MAT B, for example, the council met monthly, rotated members, and served mainly for brainstorming sessions to increase support for MAT students. A MAT newsletter grew out of this work.

Self-esteem. From the interviews, teachers, parents, and students continue to believe that MAT structure boosts student self-esteem. For example, MAT teachers and parents believed the MAT program boosted student self-esteem and helped teachers and students adjust to MAT and to middle school in general. Teachers said that, since they already knew students from the previous year, individualization of instruction for students' strengths and weaknesses could occur from the beginning of the year.
Project Adventure continued to be one of the most popular features of MAT at Crabapple. When the subject of self-esteem is discussed, MAT participants frequently indicated that Project Adventure builds strengths in the affective domain including: self-confidence, trust, and leadership.

Some students in MAT at Crabapple indicated they missed their friends in regular classes and eighth graders said they missed traditional eighth grade privileges. Some competition existed between MAT program students and non-MAT students.

Interdisciplinary Teaching. Within the Crabapple MAT Program, large, planned units involving all MAT teachers were conducted in year one. An example was the settlement of Georgia unit in which students built rafts to cross the Chattahoochee River. Parents, teachers, and students participated in the raft trip. In year two, units were smaller and appeared to involve less whole-team formal planning. MAT teachers indicated that a special focus in year three was on integration and critical thinking. Science and technology were woven together and political issues were analyzed. Thinking creatively was emphasized and inventors were invited to speak. Social studies was connected to literature. In a unit on medieval period, students were involved in art and music and students read a novel about that time. MAT teachers and students provided numerous examples of integrated teaching.

Scheduling. The instructional schedule at Crabapple appears quite flexible and changes frequently. In year two, MAT A teachers at Crabapple, changed groups every six weeks and used various criteria to form groups. Groups were created using developmental readiness, sex, interest, achievement, and ability. Students and parents commented on the extensive use of learning styles for grouping students. A variety of period and unit lengths were employed. A MAT B student indicated that in year two the schedule was less flexible, that more students were grouped by grade level, and there was less individualization than in year one.

In year three, scheduling was similar to year two. A MAT teacher indicated that, "We may be a little more locked in because math instruction is ability grouped and MAT A and B Students have instruction together."

Hands On Learning. Participants in interviews at Crabapple provided many examples in which teachers involved students in active participation in learning. Activities included: creating multi-media presentations, a variety of art projects, laboratory activities in science, computers, technology, and Project Adventure.

Inclusion for IRR and TAG Students. Teachers, parents and faculty were uniformly positive toward teaching IRR and TAG students within the MAT structure. An IRR teacher, who teaches students in both the regular program and MAT structures, stated the MAT structure is more supportive of the IRR student. Teachers, because they work with students three years, know students and can individualize learning better. Since students are not "pulled out" there is more stability and consistency in MAT and there is less stigma for IRR students assigned to MAT. The teacher prefers working in the MAT structure with LD students. For TAG students, a teacher who works with TAG in both MAT and regular settings, indicated that contracts continue to be used to differentiate instruction for the gifted who are placed in MAT. MAT does a lot of field trips and MAT TAG teachers have a common planning time and that is a large advantage for TAG in MAT. A disadvantage may be that non-TAG in MAT may distract gifted students, disciplinewise.

Sense of Community. The interviewer was impressed by remarks by teachers, parents, and students that teachers in MAT place a large emphasis on the fact that MAT is a community. Many commented about the way in which teachers stress to students the need to be a family and to learn to live together effectively. Students, for example, reported significant time devoted to conflict resolution. They say they are told that they will be together three years and are encouraged to find alternative strategies for conflict resolution. Older students are encouraged to take younger students "under their wings", to become their friends, to protect them, and to help them. Early on parents worried that older students would harass their sixth graders. Apparently, the reverse has happened because parents tell how pleased they are that eighth graders help younger learners.

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Survey Results.

Surveys to assess progress in implementing MAT and related goals were administered at the end of each school year. Table 7 presents a summary of parents perceptions of school/program effectiveness for spring, 1996. T-tests analyses reveal that MAT parents were consistently more positive than non-MAT parents in their perceptions of aspects of MAT and general school effectiveness. On a scale of 5 to 1, with 5 being an A, Excellent, and a 1 being an E, poor, all parents gave a C or better grade on all items. MAT parents gave a B or better score to 12 of the items and 14 of the MAT mean responses were statistically and significantly higher than non-MAT parent means. Items 17 through 24 were designed to examine MAT Project goals, in particular, and six of eight were statistically and significantly higher for MAT parents than for non-MAT parents.

Given that, in year three, virtually all parents chose for their child to participate in the MAT Projects, it may not be surprising that MAT parents perceive the program more positively. However, the high marks may be viewed as validation for the MAT alternative which has been implemented at Crabapple Middle.

Table 8, contains results of the survey of students' perceptions of school effectiveness for spring of 1996. While the items are essentially the same as those on the parents survey, the scale ranges from 5, always, to 1, never. Because of an error in administration of the surveys, only 18 of 23 items can be used in a MAT and non-MAT comparison. While student perceptions were generally less positive about programs at Crabapple than parents, mean responses were still in the sometimes to always range. Five of the items were marked statistically and significantly higher by MAT students. These included: Students good work is recognized; Teachers teach subjects well; Teachers communicate and plan well together; and Teachers provide hands on learning opportunities.

Like the parent responses, students may feel loyalty and ownership in the MAT program and that fact may account for higher scores. However, significantly higher responses by MAT students may also be viewed as validation for implementation of particular aspects of the MAT Program as well.

Summary. Figure 1 summarizes qualitative findings. The MAT structure has been implemented in an attempt to create a more caring and responsive environment in which teachers and students develop stronger relationships and older learners mentor younger ones. Most faculty believe that the family structure and related goals i.e. Project Adventure and mentoring relationships will enhance self-esteem. However, some students and parents are bothered by what they perceive as special treatment for MAT students and some students in the MAT structure miss spending time with peers in the Comparison program. There is evidence that thematic, interdisciplinary planning and instruction is occurring at Crabapple. More integration appears in the MAT programs and the style of planning changed from large team-wide units planned formally in year one to smaller units created informally by pairs

of teachers in year two. In year three math appeared to be taught separately from other core subjects, students in MAT A and B were taught together, and scheduling for Math appeared to reduce flexibility in scheduling in MAT programs. Hands on learning was stressed at Crabapple in all program areas. Use of manipulatives, role-plays, and materials in projects does appear to occur more frequently in the MAT teams. Faculty, parents, and students are enthusiastic in their endorsement of Project Adventure as a tool to provide a range of positive effects on personal and social development. Many talented and Gifted (TAG) students are taught within the MAT groups and a smaller number of learning disabled students are taught through inclusion in the MAT structure. In the case of the TAG students, all MAT teachers have earned gifted credentials and subject contracts are utilized, as one means, to differentiate instruction for gifted students. Learning disability teachers work within MAT structure with MAT faculty to address needs of learning disabled students. Both MAT and special teachers and gifted and learning disabled students report little or no stigma attached to services in the MAT structure.

Chart 1

Current Data Availability

Cohort	Year 0 1992-1993	Year 1 1993-1994	Year 2 1994-1995	Year 3 1995-1996
5	Grade 3	Grade 4	Grade 5	Grade 6 Self-Esteem Absenteeism Discipline
4	Grade 4	Grade 5	Grade 6 Self-Esteem Absenteeism Discipline	Grade 7 Self-Esteem Absenteeism Discipline ITBS
3	Grade 5	Grade 6 Self-Esteem Absenteeism Discipline	Grade 7 Self-Esteem Absenteeism Discipline ITBS	Grade 8 Self-Esteem Absenteeism Discipline ITBS
2	Grade 6 Self-Esteem Absenteeism Discipline	Grade 7 Self-Esteem Absenteeism Discipline ITBS	Grade 8 Self-Esteem Absenteeism Discipline ITBS	Grade 9
1	Grade 7 Self-Esteem Absenteeism Discipline ITBS	Grade 8 Self-Esteem Absenteeism Discipline ITBS	Grade 9	Grade 10

Table 1
Comparison of MAT and Comparison Students with Respect to ITBS
Performance as Measured in the Spring of 1996

Cohort 4-Grade 7

	MAT Students (n=63)		Non-MAT Students (n=64)			
Measure	Mean	Std.	Mean	Std	t	pr(t)
ITBS						
Reading Total	75.43	18.68	69.85	24.54	1.37	0.18
Reading Comprehension	78.68	17.22	70.98	25.51	1.88	0.06
Language Total	73.01	22.18	70.85	24.83	0.50	0.62
Math Concepts	74.71	22.77	71.73	22.60	0.71	0.48
Math Problem Solving	74.56	23.51	74.18	22.71	0.09	0.93
Math Total	74.85	23.12	73.16	24.28	0.39	0.70
Core Total	75.67	19.92	72.35	24.20	0.81	0.42

Cohort 3-Grade 8

	MAT Students (n=63)		Non-MAT Students (n=64)			
Measure	Mean	Std.	Mean	Std	t	pr(t)
ITBS						
Reading Total	72.63	20.17	70.65	21.64	0.48	0.63
Reading Comprehension	74.17	20.70	70.31	21.22	0.94	0.35
Language Total	77.63	24.39	74.08	24.39	0.82	0.41
Math Concepts	79.25	20.54	74.81	27.74	0.91	0.36
Math Computation	63.15	22.92	65.88	26.49	-0.56	0.58
Math Problem Solving	80.77	17.34	73.83	23.88	1.67	0.10
Math Total	76.95	20.09	73.52	25.62	0.76	0.45
Core Total	77.93	18.75	74.56	23.93	0.80	0.43

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Table 2
Comparison of MAT and Non-MAT Students with Respect to Absenteeism and Disciplinary Referrals for the 1995-1996 School Year

Grade Six Cohort 5	MAT Students (n=63) Mean	Std.	Non-MAT Students (n=64) Mean	Std.	t	pr(t)
Absenteeism	6.94	5.96	8.17	7.58	-1.02	0.308
Discipline Referrals						
Team Referrals	0.06	0.25	0.13	0.49	-0.89	0.370
Non-Team Referrals	0.10	0.35	0.25	0.76	-1.49	0.141

Grade Seven Cohort 4	MAT Students (n=64) Mean	Std.	Non-MAT Students (n=60) Mean	Std.	t	pr(t)
Absenteeism	7.72	6.10	9.21	7.89	-1.18	0.242
Discipline Referrals						
Team Referrals	0.04	0.21	0.27	1.18	-1.55	0.127
Non-Team Referrals	0.44	2.26	0.71	1.94	-0.74	0.459

Grade Eight Cohort 3	MAT Students (n=61) Mean	Std.	Non-MAT Students (n=56) Mean	Std.	t	pr(t)
Absenteeism	9.95	9.47	8.14	6.01	1.20	0.234
Discipline Referrals						
Team Referrals	0.13	0.46	0.75	1.47	-3.02	.004*
Non-Team Referrals	0.08	0.33	0.27	0.77	-1.66	0.101

Table 3
Results of ANOVA for School Self-Concept for Students at Crabapple Middle Using Program (MAT/Non-MAT), Grade (6,7,8), and Time (Fall/Spring) as Design Factors

Sources	df	MS (Type III	F	p
Program	1	15.62	4.80	0.04
Time	1	18.22	4.76	0.03
Grade	2	1.21	0.32	0.73
Program x Time	1	1.21	0.32	0.57
Program x Grade	2	26.50	6.92	0.00
Time x Grade	2	4.64	1.21	0.30
Program x Grade	2	2.20	0.53	0.59
Error	649	3.83		

Descriptive Statistics Involving School Self-Concept for Statistically Significant Effects

	Mean	Std.
Program		
Non-MAT	5.41	1.95
MAT	5.04	1.99
Time		
Fall	5.36	2.00
Spring	5.05	1.95
Program		
Non-MAT		
Grade 6	5.77	1.81
Grade 7	5.41	1.89
Grade 8	4.92	2.10
MAT		
Grade 6	4.75	2.10
Grade 7	5.08	1.91
Grade 8	5.30	1.96

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Table 4

Results of ANOVA for Social Self-Concept for Students at Crabapple Middle Using Program (MAT/Non-MAT), Grade (6,7,8), and Time (Fall/Spring) as Design Factors

Sources	df	MS (Type III)	F	p
Program	1	26.15	8.34	0.004
Time	1	5.69	1.81	0.179
Grade	2	1.69	0.54	0.580
Program x Time	1	0.00	0.00	0.970
Program x Grade	2	6.78	2.16	0.120
Time x Grade	2	10.12	3.23	0.040
Program x Time x Grade	2	2.44	0.78	0.460
Error	649	3.14		

Descriptive Statistics Involving Social Self-Concept for Statistically Significant Effects

		Mean	Std
Program			
	Non MAT	6.47	1.75
	MAT	6.02	1.79
Time x Grade			
Fall	Grade 6	6.20	1.88
	Grade 7	6.40	1.70
	Grade 8	6.31	1.80
Spring	Grade 6	6.36	1.67
	Grade 7	5.77	2.00
	Grade 8	6.28	1.60

Table 5
Results of ANOVA for Home Self-Concept for Students at Crabapple Middle Using Program (MAT/Non-MAT), Grade (6,7,8), and Time (Fall\Spring) as Design Factors

Sources	df	MS (Type III)	F	p
Program	1	119.27	23.80	0.000
Time	1	10.72	2.14	0.144
Grade	2	16.80	3.35	0.036
Program x Time	1	0.06	0.01	0.913
Program x Grade	2	9.70	1.94	0.145
Time x Grade	2	1.86	0.37	0.691
Program x Time x Grade	2	1.75	0.35	0.705
Error	649	5.01		

Descriptive Statistics Involving Home Self-Concept for Statistically Significant Effects

		Mean	Std.
Program	Non-MAT	5.96	2.10
	MAT	5.06	2.35
Grade	Grade 6	5.76	2.22
	Grade 7	5.40	2.37
	Grade 8	5.15	2.24

Table 6

Results of ANOVA for General Self-Concept for Students at Crabapple Middle Using Program (MAT/Non-MAT), Grade (6,7,8), and Time (Fall/Spring) as Design Factors

General Self Sources	df	MS (Type III)	F	P
Program	1	442.15	19.02	0.000
Time	1	51.37	2.21	0.140
Grade	2	2.57	0.11	0.900
Program x Time	1	0.21	0.01	0.920
Program x Grade	2	41.04	1.77	0.170
Time x Grade	2	29.15	1.25	0.290
Program x time x G	2	41.97	1.81	0.170
Error	649	23.25		

Descriptive Statistics Involving General Self-Esteem for Statistically Significant Effects

		Mean	Std.
Program			
	Non-MAT	19.77	4.59
	MAT	18.02	5.00

Table 7. MAT and Comparison Parents' Perceptions of School Effectiveness for 1995-1996

Scale: Excellent = A, Above Average = B, Average = C, Below Average = D, Poor = E (Note: A=5;B=4;C=3;D=2;E=1)

ITEMS	MAT Parents (N=64)		Non-MAT Parents Parents (N=39)			
	Mean	SD	Mean	SD	t	pr(t)
1. The climate for learning in my child's school.	3.75	.91	3.59	.83	.85	.40
2. The educational standardsin my child's school.	3.97	.71	3.72	.89	1.58	.12
3. The way students are grouped for instruction in my child'sschool.	4.02	.85	3.13	1.04	4.67	.0000*
4. How well teachers and administrators maintain discipline in my child's school.	3.49	1.01	3.31	.92	.92	.36
5. How well children get along with other children in my child's school.	3.73	.72	3.41	.85	2.07	.05*
6. How well the school helps my child learn to get along with others.	3.54	.80	3.28	1.00	1.44	.15
7. The way teachers and administrators encourage students to do well.	3.94	.94	3.48	.97	2.32	.02*
8. How well the school personnel treat my child.	4.10	.87	3.56	.82	3.05	.003*
9. Relations between parents and the school faculty.	3.87	.94	3.44	1.02	2.24	.03*

		MAT		Non-MAT			
		Mean	Std	Mean	Std.	t	pr(t)
10.	How well my child's school builds self-esteem.	3.78	.92	3.21	.92	3.04	.003*
11.	The reports I get about my child's progress.	3.83	.86	3.5	1.16	1.53	.13
12.	The amount of information I receive about school activities.	3.58	.91	3.54	1.21	.18	.86
13.	How well parents help with home work.	3.76	.84	3.57	.88	1.02	.31
14.	Students good work is recognizede and rewarded	3.74	.94	3.43	1.01	1.54	.13
15.	The quality of the teaching of subjects in my child's school.	4.06	.77	3.56	.85	3.05	.003*
16.	How well teachers' communicate and plan with one another.	4.23	.86	3.33	.74	5.07	.0000*
17.	How well "Hands on" or active involvement in learning occurs.	4.32	.66	3.61	.77	4.88	.0000*
18.	How well teachers team-teach classes?	4.32	.78	3.41	.91	5.08	.0000*
19.	How well cooperative learning is used.	4.00	.76	3.41	.86	3.47	.0008*
20.	How well subjects are interrelated.	4.06	.82	3.31	.71	4.52	.0000*
21.	How well gifted students are taught.	3.89	.99	3.64	1.11	.99	.33
22.	How well learning disabled students are taught.	4.12	.78	3.22	.60	4.67	.0000*

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Page 3	MAT Mean	Std.	Non-MAT Mean	Std.	t	pr(t)
23. The way teachers care about students	4.14	.89	3.33	.87	4.51	.0000*
24. The amount of success Crabapple students achieve.	3.91	.79	3.6	.69	1.97	.05
Items for parents of students in the MAT program.						
25. How well Project Adventure is conducted?	4.39	.68				
26. My overall evaluation of the MAT program.	4.23	.89				

Please comment on the following (all parents):

A. Improvements needed at Crabapple Middle School:

B. Strengths of Crabapple Middle School:

Table 8
Comparison of Crabapple MAT and Non-MAT Students' Perceptions of Programs at Crabapple Middle as Measured in the Spring of 1996

Scale: Always = A, Often = B, Sometimes = C, Seldom = D, and Never = E.

		MAT Students (n=186)		Non-MAT Students (153)			
		Mean	Std.	Mean	Std.	t	pr(t)
1.	Students like coming to school.	2.78	1.11	2.76	1.09	.17	.87
2.	Students know what is expected in this school.	3.80	1.01	3.75	1.01	-.51	.61
3.	Students are grouped well for school work.	3.21	1.12	3.09	1.17	-1.02	.31
4.	Teachers handle behavior problems well.	3.21	1.10	3.05	1.21	-1.25	.21
5.	Students get along well with other students.	3.48	.93	3.42	.89	-.64	.52
6.	Teachers teach students how to get along with others.	2.82	1.26	2.77	1.22	-.36	.72
7.	Teachers encourage students to do well.	3.90	1.06	3.79	1.10	-.96	.34
8.	Teachers and administrators treat students well.	3.54	1.05	3.47	1.16	-.61	.54
9.	Parents and teachers communicate well.	3.32	1.12	3.32	1.09	.03	.98
10.	Teachers and administrators encourage students to feel good about themselves.	3.46	1.10	3.52	1.18	.49	.63
11.	Parents know how their students are doing in school.	3.22	1.16	3.23	1.18	.02	.99
12.	Teachers and administrators inform parents about school activities.	3.04	1.21	3.31	1.23	2.02	.04*

13.	Parents of Crabapple students help with homework.	3.58	.94	3.55	1.10	-.14	.89
14.	Students' good work is recognized and rewarded.	3.82	1.02	3.44	1.15	-3.25	.001*
15.	Teachers teach subjects well.	3.91	.91	3.34	1.11	-5.08	.000*
16.	Teachers communicate and plan well with one another.	3.40	1.11	2.41	1.31	-7.39	.000*
17.	Teachers provide opportunities for "hands on" or active participation in learning.	3.67	1.01	3.16	1.09	-4.52	.000*
18.	One or more teachers team teach during classes	3.16	1.11	3.20	1.18	.31	.76
19.	Teachers use cooperative or team learning.						

(Note: Since two different survey forms were administered to MAT and non-MAT students, comparisons on items 19-24 are not possible.)

Please mark number 20 only if your are currently in TAG.
20. Gifted students are taught well.

Please mark number 21 only if you are being taught by an IRR teacher.

21. IRR (learning disabled) students are taught well.

Please mark items 22 and 23 only if you are currently on one of the MAT Teams):

22. Project Adventure activities are taught well.

23. The MAT program is conducted effectively.

Please comment on the following (all students):
A. Improvements needed at Crabapple school are:
B. Strengths of the Crabapple program are:

Figure 1.

Inferences from Interviews with Crabapple Teachers, Parents, and Students at the end of the 1995 School Year

Project Goal	Outcome
Create MAT Structure	MAT Represents a caring, nurturing family structure. Eighth Graders mentor seventh and sixth graders.
Enhanced Self-Esteem	Most MAT teachers and parents believe that MAT structure enhances self-esteem. Some students are bothered by using texts for older or younger students. Some MAT students miss being with historical peers in the comparison program.
Interdisciplinary Teaching	Teachers plan interdisciplinary units as a team. In year one, units were larger and more team members were involved. In year two, units were smaller and taught by fewer team members. Math tends to be taught separately in year two.
Hands On Learning	There is considerable evidence of hands on learning in MAT and Comparison program. Hands on appears to occur more often in the MAT groups.
Flexible Scheduling	The schedule is changed frequently in the MAT Groups. The schedule is often planned for two-three weeks ahead.
Grouping	Groups in the MAT structure are changed every six weeks. Teachers move students from group to group during the year.
Project Adventure	Teachers, students, and parents believe that Project Adventure builds self confidence, team relationships, leadership, and problems solving skills. Parents and students would like to have Project Adventure taught more frequently.

Inclusion Grouping	Most teachers, students, and parents are positive about having gifted and learning disabled students taught within the MAT structure. Gifted students report they are more comfortable in MAT structure since they are not singled out. They say they are "picked on" less.
Critical Thinking	Contract extensions provide evidence of individualization to enhance higher order thinking for students, including gifted and high achieving students.